# US Electric Utilities & IPPs
## PJM: The Full Auction Download

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**Julien Dumoulin-Smith**
Analyst
julien.dumoulin-smith@ubs.com
+1-212-713 9848

Michael Weinstein
Associate Analyst
michael.weinstein@ubs.com
+1-212-713 3182

Paul Zimbardo
Associate Analyst
paul.zimbardo@ubs.com
+1-212-713 1033

**Breathing renewed life back into power with positive capacity auction print**
We see results released from last Friday's capacity auction results as supportive of the sector overall, with results modestly ahead of Street expectations, and with several regions breaking out at very high levels as well (ComEd, but also unexpected was EMAAC). We maintain the most positively impacted companies are EXC, NRG, and DYN vs. expectations, but also emphasize CPN. We see PSEG and TLN as secondary beneficiaries. We believe modest benefits are likely to accrue to AEP and AES as well, with FE losing its ATSI zone more of a ~net neutral event. See full sensitivity tables vs. investor expectations below. The results are unabashedly constructive vs. Street expectations all around. Given weak recent sector performance, we expect a bounce in shares on Monday across the board, particularly for hard-pressed IPPs. Link to full PJM results. Please also see our latest survey expectations released on Friday as well as our auction preview and auction first read from late Friday

**Capacity auction reveals a surprising lack of new construction and strong DR**
With only 3.5 GW of new construction and uprates incrementally clearing this year's 2018/19 capacity auction, we see growing evidence that last year's +6 GW increase may have been the peak for new gas-fired generation within PJM. The lack of new build was likely driven by a combination of increased penalty risk under Capacity Performance, higher collateral requirements, potentially lower forward spark spreads, prospective higher interest rates; while we believe some of this could re-emerge next year (collateral and permitting are both timing issues arising from more stringent last-minute CP requirements), but overall we emphasize this is likely the sign of a peak in new CCGT build. We think this is likely the most bullish datapoint for sentiment.

**PSEG Power's Sewaren new CCGT clears in EMAAC**
PEG has already reported that their new 527-MW (UCAP) CCGT unit at Sewaren was the only new unit to clear in EMAAC. Furthermore, they also report that Power cleared a similar amount of capacity overall vs last year's auction at an average price of \$215/MW-day, with 80% in EMAAC and all but one unit clearing as Capacity Performance assets. We believe all other new CCGTs were in Ohio or West Virginia, reflecting a firm shift towards tapping Utica shale over Marcellus as the focus of new plants.

**But how long will other regions clear high?**

We believe ComEd will continue to clear at distinctly higher prices, with new entry still not supported by cheap gas, and likelihood for further plant retirements in the region as coal mandates coincide with real potential for nuclear retirements. As for EMAAC, Speculation here will likely swirl around how long this region could remain.

**Strength of Demand Resources was our biggest surprise**
Total cleared Demand Resources increased 110 MW vs our expectation for a reduction of almost -6 GW vs last year's (and this year's) total 11 GW. The flattish result was a surprise vs our thinking that at least a portion of last year's limited products would opt not to participation as base products priced lower; ultimately, the base auction saw prices higher YoY, and driving higher cleared DR YoY.

## Distilling the auction results: A quick look at the numbers

We show a summary below of the latest auction results for the 2018/19 period, comparing to our own estimates and results from our recent survey of investors and industry participants. The results were broadly in line with $164/MW-day for RTO; with only the ComEd and EMAAC regions breaking out separately at $215/MW-day and $225/MW-day, respectively. Our survey had earlier shown ComEd and Public Service Zone as the top regions in terms of expectations of breaking-out.

**Figure 1: Auction Clearing Price vs. UBS expectations and Survey Results**

| | 2017/2018 | UBSe 2017/18 | UBS Investor Survey | UBS Industry Survey | 2018/2019 Auction Actual |
|---|---|---|---|---|---|
| Resource Clearing Prices ($/MW-day) | | | | | |
| RTO | $120.00 | $160.00 | $140-159 | $160-179 | $164.77 |
| EMAAC | $120.00 | $160.00 | $140-159 | $160-179 | $225.42 |
| SWMAAC | $120.00 | $160.00 | $140-159 | $160-179 | $164.77 |
| MAAC | $120.00 | $160.00 | $140-159 | $160-179 | $164.77 |
| DPL-S | $120.00 | $160.00 | $140-159 | $160-179 | $225.42 |
| PS-N | $215.00 | $160.00 | $140-159 | $160-179 | $225.42 |
| PSEG | $215.00 | $160.00 | $140-159 | $160-179 | $225.42 |
| PEPCO | $120.00 | $160.00 | $140-159 | $160-179 | $164.77 |
| ATSI | $120.00 | $160.00 | $140-159 | $160-179 | $164.77 |
| ComEd *(new)* | $120.00 | $160.00 | $140-159 | $160-179 | $215.00 |

Source: PJM, UBS estimates, UBS Survey of Investors and Industry Participants

## A look at company sensitivities

We include a brief summary of capacity by region for PJM-impacted companied under coverage. For emphasize that there are only three categories that matter for the purpose of the latest auction: PJM RTO, EMAAC, and ComEd.

For the purpose of calculating the Street 'surprise' factor we estimate PJM was looking to clear at $150/MW-day and ~$200/MW-day for ComEd. Many did not expect EMAAC to clear separately, such that this represented a +$75/MW-day breakout vs. prices at $150/MW-day. That said, we show the same uplift for PSEG zone, however expectations here too were a bit elevated (such that real 'expectation' may well have been closer to 200 akin ComEd). Further, we emphasize that some had expected FirstEnergy to continue to break out.

**Figure 2: Total Company Estimates by Region vs "Street Expectations"**

| Total MW | NRG | CPN | FE | PEG | EXC | TLN | AEP | AES | DYN |
|---|---|---|---|---|---|---|---|---|---|
| ATSI | | | 7,669.8 | | | | | | 466.0 |
| RTO | 10,536.0 | | 4,624.2 | 1,284.0 | | 868.0 | 8,668.0 | 3,818.0 | 11,587.0 |
| EMAAC | 908.0 | 4,100.0 | 77.4 | 3,661.0 | 8,325.0 | 659.0 | | | 600.0 |
| MAAC | | 1,100.0 | 322.0 | 1,530.0 | 4,600.0 | 11,051.0 | | | |
| PS | | | | 6,902.1 | | | | | |
| ComEd | 5,947.0 | 500.0 | | | 7,836.0 | | | | 1,888.0 |
| Total | 17,391.0 | 5,200.0 | 12,693.4 | 13,377.1 | 20,761.0 | 12,578.0 | 8,668.0 | 3,818.0 | 14,541.0 |
| **EFORd Adj. (MW)** | NRG | CPN | FE | PEG | EXC | TLN | AEP | AES | DYN |
| ATSI | 0.0 | 0.0 | 7,209.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 438.0 |
| RTO | 9,903.8 | 0.0 | 4,346.7 | 1,207.0 | 0.0 | 815.9 | 8,147.9 | 3,588.9 | 10,891.8 |
| EMAAC | 853.5 | 3,854.0 | 72.8 | 3,441.3 | 7,825.5 | 619.5 | 0.0 | 0.0 | 564.0 |
| MAAC | 0.0 | 1,034.0 | 302.7 | 1,438.2 | 4,324.0 | 10,387.9 | 0.0 | 0.0 | 0.0 |
| PS | 0.0 | 0.0 | 0.0 | 6,488.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| ComEd | 5,590.2 | 470.0 | 0.0 | 0.0 | 7,365.8 | 0.0 | 0.0 | 0.0 | 1,774.7 |
| Total | 16,347.5 | 5,358.0 | 11,931.8 | 12,574.5 | 19,515.3 | 11,823.3 | 8,147.9 | 3,588.9 | 13,668.5 |

*Sensitvities vs. "street surprise" magnitude*

| RTO (looking at a $15/MW-day sensitivity) | NRG | CPN | FE | PEG | EXC | TLN | AEP | AES | DYN |
|---|---|---|---|---|---|---|---|---|---|
| $15/MW-day Sensitivity ($M) | 54.22 | 0.00 | 23.80 | 6.61 | 0.00 | 4.47 | 44.61 | 19.65 | 59.63 |
| % of total 2018 UBS Estimate | 2.0% | 0.0% | 1.4% | 0.3% | 0.0% | 0.6% | 1.5% | 1.2% | 4.0% |

| ComEd (looking at a $15/MW-day sensitivity) | NRG | CPN | EXC | DYN |
|---|---|---|---|---|
| $15/MW-day Sensitivity ($M) | 30.61 | 2.57 | 40.33 | 9.72 |
| % of total 2018 UBS Estimate | 1.1% | 0.1% | 1.2% | 0.6% |

| EMAAC (looking at a $75/MW-day sensitivity) | NRG | CPN | FE | PEG | EXC | TLN | AEP | AES | DYN |
|---|---|---|---|---|---|---|---|---|---|
| $75/MW-day Sensitivity ($M) | 23.37 | 105.50 | 1.99 | 94.21 | 214.22 | 16.96 | 0.00 | 0.00 | 15.44 |
| % of total 2018 UBS Estimate | 0.8% | 5.2% | 0.1% | 4.5% | 6.5% | 2.1% | 0.0% | 0.0% | 1.0% |

| Overall Company Impact | NRG | CPN | FE | PEG | EXC | TLN | AEP | AES | DYN |
|---|---|---|---|---|---|---|---|---|---|
| $mn Impact from RTO+ComeEd+EMAAC | 108 | 108 | 26 | 101 | 255 | 21 | 45 | 20 | 85 |
| Impact to EPS ($) | 0.21 | 0.18 | 0.04 | 0.13 | 0.19 | 0.11 | 0.06 | 0.02 | 0.55 |
| UBS 2018 EPS or EBITDA | 2,749 | 2,023 | 2.6 | 2.7 | 2.5 | 792 | 4.0 | 1.5 | 1,498 |
| % of total 2018 UBS Estimate | 3.9% | 5.3% | 1.6% | 4.8% | 7.7% | 2.7% | 1.5% | 1.2% | 5.7% |

Source: Company reports, SNL, and UBS estimates

## Company disclosures forthcoming

We expect most companies to provide more granular disclosures of cleared MWs in coming weeks, particularly for those in regions with 'break outs' (adding risk of non-cleared MWs) as well as those regions (such as PPL) where the base price was meaningfully lower than the CP price.

**Specifics around each company:**

- **FE:** What was the fate of its Manfield and Sammis plants following several periods in which the ATSI region cleared separately? It appears both plants largely cleared. Rather, now the shift moves back to the PUCO – and potential for above-market coal deal, which we read as modestly less likely following a PUCO statement released with results seemingly reiterating support for market principles. Additionally, we think new CCGTs confirming build in Ohio is likely also a modest neg to likelihood of a coal PPA structure.
- **EXC:** Being the clearest 'winner' in the latest auction with breakouts in both of its regions (EMAAC and ComEd), we see clear disclosures as necessary

- **NRG:** Given the breakout of the Comed zone, we believe NRG may not have cleared all of its EME portfolio. We attribute the higher clearing price in ComEd to NRG's actions as it was unlikely EXC would clear Quad Cities given public overtures around plant retirement given economic losses.

- **PSEG:** Within EMAAC, PSEG Power has already reported that their new CCGT at Sewaren is the 527 MW new unit to clear there and that they also retired some existing peaking capacity at that site. Furthermore, PSEG reports that they cleared a total amount of capacity similar to last year's auction, with all but one unit clearing as Capacity Performance (80% within EMAAC).

  Following the company's decision to deploy capital to build out the Keys Energy Center in Maryland, this appears only further confirmation PSEG is willing to buck investor doubts – and deploy incremental balance sheet latitude. Funding of this new plant is likely entirely funded from incremental leverage. The question remains *what* exactly has precipitated this change in strategic shift for PSEG – and to what extent CFO Dorsa's departure is related. Bottom line, we believe shares will continue to do well on the back of continued willingness to deploy its balance sheet (both projects are likely to be funded almost entirely with leverage)

- **CPN:** We believe the company did *not* clear incremental capacity.

## How Much Cleared – and Didn't - By Region

In the table below we summarize the clearing results in each LDA. Among the areas of the results with the greatest discrepancy vs. Street/UBSe was the base product, which cleared at $149.98/MW-day for RTO, quite close to the Capacity Performance Price. We had previously feared results would be closer to $50-100/MW-day as Demand Response and low-quality steamers fearing PJM's capacity performance scheme opted to continue to clear their units via the legacy base product (and subject to substantially lower risk premiums). Despite the higher prices, we believe numerous gas and coal peakers still did not clear – with some potential risk to TLN and GenOn via BGE/PEPCO, TLN via PPL, and PSEG via its own zone.

<u>Specific commentary on LDAs</u>

- **PPL:** The only region where base prices remained low was in the PPL zone (read: TLN), where prices hit just $75/MW-day (closer to our expectation for where base products would have cleared). As such, we place a disproportionate focus on TLN's cleared MWs. It's also notable that *any* region was able to clear *below* RTO prices, seeing this as previously unattainable under the prior implementation of the capacity auction.

- **ComEd:** *What didn't clear?* With roughly ~3GW not clearing the auction, we see suspect it is clear that both NRG and EXC did not clear units (as all *other* capacity owned by generators in the region, including CPN and DYN among other private assets) is highly likely to have cleared the auction. We believe the two units not clearing are EXC's 75% stake in Quad Cities at 1.4GW of 1.8GW and NRG (EME's) Will County coal plant (761 MW).

- **ATSI:** Most of FirstEnergy's capacity appears to have cleared in the auction, including likely both the Mansfield and Sammis coal plants. With 2Q results, management had indicated it would evaluate whether to continue to invest in

the plant – or opt to mothball the plant and engage in the coal ash dewatering facility while it was not running.

**Figure 3: RPM Base Residual Auction Clearing Results in the LDAs**

| | RTO | MAAC | SWMAAC | PEPCO | BGE | EMAAC | DPL-South | PSEG | PS-North | ATSI | ATSI-Clev | PPL | ComEd |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Offered MW (UCAP) | 179,891.2 | 73,545.7 | 12,621.2 | 5,991.2 | 4,224.9 | 33,840.0 | 1,695.9 | 6,939.3 | 3,645.3 | 11,085.7 | 2,590.4 | 11,157.6 | 26,275.6 |
| Cleared MW (UCAP) | 166,836.9 | 66,071.2 | 11,180.7 | 5,478.7 | 3,296.9 | 31,069.0 | 1,693.5 | 5,300.8 | 3,168.0 | 10,171.6 | 2,258.1 | 9,526.9 | 23,320.4 |
| Uncleared | 13,054.3 | 7,474.5 | 1,440.5 | 512.5 | 928.0 | 2,771.0 | 2.4 | 1,638.5 | 477.3 | 914.1 | 332.3 | 1,630.7 | 2,955.2 |
| | | | | | | | | | | | | | |
| System Marginal Price | $164.77 | $164.77 | $164.77 | $164.77 | $164.77 | $164.77 | $164.77 | $164.77 | $164.77 | $164.77 | $164.77 | $164.77 | $164.77 |
| Locational Price Adder | | | | | | $60.65 | | | | | | | $50.23 |
| Base Capacity Resource Pri | -$14.79 | -$14.79 | -$14.79 | -$14.79 | -$14.79 | -$14.79 | -$14.79 | -$14.79 | -$14.79 | -$14.79 | -$14.79 | -$89.77 | -$89.77 |
| Base DR/EE Capacity Price | - | | -$90.03 | -$108.89 | -$90.03 | | | | | | | | |
| RCP for Base DR/EE Resou | $149.98 | $149.98 | $59.95 | $41.09 | $59.95 | $210.63 | $210.63 | $210.63 | $210.63 | $149.98 | $149.98 | $75.00 | $125.23 |
| RCP for Base Generation R | $149.98 | $149.98 | $149.98 | $149.98 | $149.98 | $210.63 | $210.63 | $210.63 | $210.63 | $149.98 | $149.98 | $75.00 | $125.23 |
| RCP for Capacity Performar | $164.77 | $164.77 | $164.77 | $164.77 | $164.77 | $225.42 | $225.42 | $225.42 | $225.42 | $164.77 | $164.77 | $164.77 | $215.00 |

Source: PJM and UBS estimates

## Demand Response and Energy Efficiency: Still up YoY?

In the table below we show summarize the DR and EE resources that offered and cleared in the 2018/2019 BRA, broken down by key zones. PJM's auction data shows that ~95% of the DR and 95.4% of the EE resources that were offered cleared the BRA. Resources which did not clear were presumably offered at prices above the applicable clearing price for the LDA in which the resource was offered.

**Figure 4: Demand Response and Energy Efficiency Resources offered and cleared 2018/19 RPM BRA**

| Region | LDA | Demand Response | Energy Efficiency | Total | Demand Response | Energy Efficiency | Total | % Cleared |
|---|---|---|---|---|---|---|---|---|
| EMAAC | AECO | 165.1 | 3.0 | 168.1 | 162.1 | 3.0 | 165.1 | 98% |
| | DPL | 422.7 | 11.3 | 434.0 | 418.2 | 11.0 | 429.2 | 99% |
| | JCPL | 206.4 | 11.4 | 217.8 | 200.1 | 11.4 | 211.5 | 97% |
| | PECO | 513.0 | 14.7 | 527.7 | 504.5 | 14.7 | 519.2 | 98% |
| | PSEG | 386.6 | 14.5 | 401.1 | 382.2 | 14.1 | 396.3 | 99% |
| | RECO | 7.6 | 0.1 | 7.7 | 7.5 | 0.1 | 7.6 | 99% |
| | Sub-Total | 1,701.4 | 55.0 | 1,756.4 | 1,674.6 | 54.3 | 1,728.9 | 98% |
| PEPCO | PEPCO | 667.1 | 67.3 | 734.4 | 523.1 | 66.4 | 589.5 | 80% |
| Grand Total MAAC | | 4,783.5 | 298.4 | 5,081.9 | 4,286.0 | 258.6 | 4,544.6 | 89% |
| | Sub-Total | 6,892.0 | 1,007.7 | 7,899.7 | 6,798.4 | 987.9 | 7,786.3 | 99% |
| **Grand Total** | | **11,675.5** | **1,306.1** | **12,981.6** | **11,084.4** | **1,246.5** | **12,330.9** | **95%** |

Source: PJM, UBS estimates

## So where did the Increase in the DR/EE Come From?

In the table below we show a comparison between DR resources offered and cleared in 2017/18 BRA vs. 2018/19 BRA. A total of 11,675.5 MW (UCAP) DR was offered into the 2018/2019 BRA was – a 3.4% increase compared to DR offered

into the 2017/2018 BRA. 11,084.4 MW DR cleared in this auction – which is 109.6 MW more than what cleared in the 2017/2018 BRA. The bulk of this was still from the RTO region of the footprint with cleared capacity largely intact.

**Figure 5: DR Offered and Cleared in 2017/18 BRA & 2018/19 BRA**

| Region | LDA | 2017/18 | 2018/19 | Increase in Offered MW | 2017/18 | 2018/19 | Increase in Cleared MW |
|---|---|---|---|---|---|---|---|
| EMAAC | AECO | 134.8 | 165.1 | 30.3 | 134.7 | 162.1 | 30.3 |
| | DPL | 372.9 | 422.7 | 49.8 | 369.7 | 418.2 | 49.8 |
| | JCPL | 169.8 | 206.4 | 36.6 | 159.4 | 200.1 | 36.6 |
| | PECO | 494.1 | 513.0 | 18.9 | 480.0 | 504.5 | 18.9 |
| | PSEG | 392.7 | 386.6 | (6.1) | 388.4 | 382.2 | (6.1) |
| | RECO | 3.4 | 7.6 | 4.2 | 3.4 | 7.5 | 4.2 |
| | Sub-Total | 1,567.7 | 1,701.4 | 133.7 | 1,535.6 | 1,674.6 | 133.7 |
| PEPCO | PEPCO | 619.8 | 667.1 | 47.3 | 608.4 | 523.1 | 47.3 |
| Grand Total MAAC | | 4,477.7 | 4,783.5 | 305.8 | 4,277.1 | 4,286.0 | 305.8 |
| **Grand Total** | | 11,293.7 | 11,675.5 | 381.8 | 10,974.8 | 11,084.4 | 381.8 |

Source: PJM, UBS estimates

### What do we learn from continued DR and EE participation?

- Resources are not scared of the ongoing Supreme Court litigation over federal vs state jurisdiction. Rather the industry appears resilient to regulatory risk poised by any sudden shift. The sector expectation appears to be that any adverse outcome would allow for a palatable 'down shifting' in participation, as well as could involve some 'quick' fix to enable DR aggregation to take place at the state level.

- Base prices continued to clear high enough such that DR and EE could readily continue to clear under their legacy obligations without fault; we had thought base prices would clear substantially lower than the CP product, forcing DR providers to migrate to the riskier project *or* accept significantly lower prices. Rather, the increase in DR/EE would seem to coincide with the *higher* base capacity price afforded to these products across most of the footprint

### How will DR/EE really fair under the CP program?

- 6.2GW of Demand Response bid in *only as the base product.* The question is to what extent base products will prove successful in re-tooling bids as necessary to compete once the auction migrates to 100% CP in 2020/2021. Next year, the % procurement remains unchanged at 80% CP/20% base. This is a bullish prospect for the 2020/2021 auction.

### Results are constructive for the DR sector

Given headwinds in recent years, we see the DR results as quite positive, with expectations for the base auction having been quite modest going into this latest result. With the bulk of the base product cleared as DR, we see aggregators such as EnerNOC (ENOC) could react positively to the latest pricing datapoint.

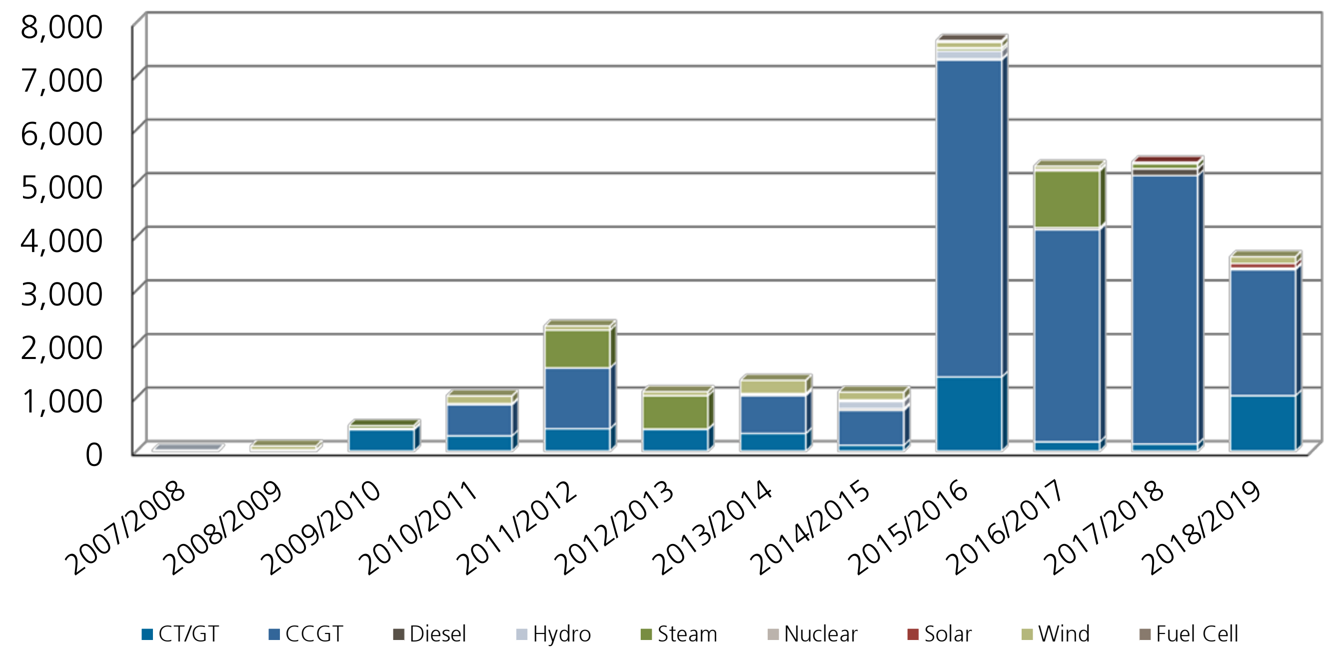
## Incremental supply continues to decline

<u>Are we seeing a topping out of new supply build in PJM? We think so.</u> While not only are optimal sites for new development slowing, we think higher interest rates and declining spark spreads could suggest a further deceleration in new build.

**The slowing in incremental new capacity remains constructive**

Among the most constructive datapoints from the latest auction is this slowing trend. The question remains to what extent is this a 'head fake' driven by a simple-lag from Capacity Performance implementation (eg – units were not sufficiently prepared in the queue and faced with suddenly higher collateral requirements given late decision from FERC on approving the changes).

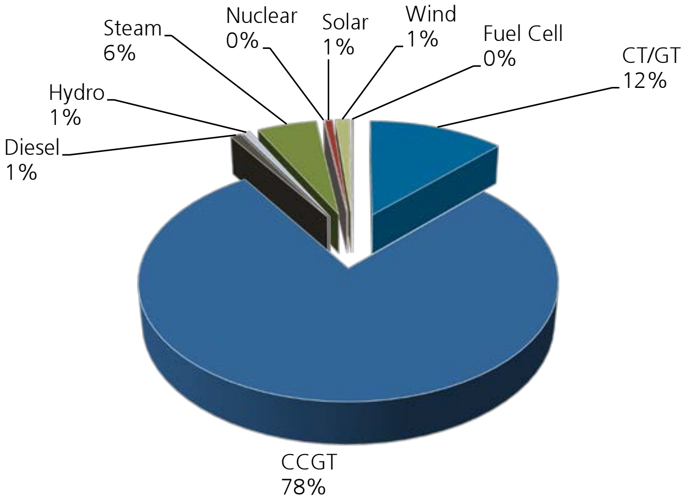
**Figure 6: PJM RPM Base Residual Auction Incremental Cleared Supply, 2007/8-2018/19**




Source: PJM Interconnection, LLC

In the pie chart below, we highlight the breakdown of 22 GW of incremental cleared supply from the auctions for 2015/16 through 2018/19 as an indicator of new build to occur from 2015-2019. Roughly 91% is gas-fired.

**Figure 7: PJM RPM Incremental Cleared Supply from 2015/16 to 2018/19**




Source: PJM Interconnection, LLC

## What's the impact from all these plants on the incremental gas supply S/D

In the table below, we estimate the impact that cleared gas-fired generation is expected to have on incremental natural gas demand and reduced Appalachian coal demand through 2019. Through 2018, the uplift would appear to be 1.8 bcf/d for new CCGT and CT capacity committed into the auction, translating to 42 mn tons of lost coal suppl or ~16% demand destruction of the Appalachian market.

**Figure 8: Impact of New Entry CCGT/CC Gas Demand on Incremental Gas Demand and Appalachian Coal Demand**

| New Entry CCGT/CT Gas Demand | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 |
|---|---|---|---|---|---|
| CCGT GWs coming online (PJM RPM auction results) | 0.7 | 5.9 | 4.0 | 5.0 | 2.4 |
| Cap factor CCGT (UBS estimate) | 65% | 65% | 65% | 65% | 65% |
| GWhs from CCGT | 3,701 | 33,677 | 22,545 | 28,527 | 13,394 |
| Heat Rate CCGT (MMBTU/MWh) | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| Incremental CCGT MMBTUs gas burn per year | 24,057,150 | 218,901,560 | 146,545,055 | 185,425,110 | 87,060,975 |
| | | | | | |
| CT/GT GWs coming online (PJM RPM auction results) | 0.1 | 1.4 | 0.2 | 0.1 | 1.0 |
| Cap factor CT/GT (UBS estimate) | 20% | 20% | 20% | 20% | 20% |
| GWhs from CT/GT | 189 | 2,422 | 300 | 230 | 1,809 |
| Heat Rate CT/GT (MMBTU/MWh) | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Incremental CT/GT MMBTUs gas burn per year | 1,892,160 | 24,221,400 | 2,997,672 | 2,295,120 | 18,089,400 |
| | | | | | |
| Total Incremental MMBTUs gas burn per year | 25,949,310 | 243,122,960 | 149,542,727 | 187,720,230 | 105,150,375 |
| MMBTU/MCF | 1.023 | 1.023 | 1.023 | 1.023 | 1.023 |
| Incremental MCF gas burn per year | 23,516,276 | 213,980,019 | 143,250,298 | 181,256,217 | 85,103,593 |
| Incremental BCF gas burn per year | 23.5 | 214.0 | 143.3 | 181.3 | 85.1 |
| **Incremental BCF per day** | **0.1** | **0.6** | **0.4** | **0.5** | **0.2** |
| **Cumulative incremental BCF per day** | **0.1** | **0.7** | **1.0** | **1.5** | **1.8** |
| | | | | | |
| **Impact on Coal Burn** | | | | | |
| GWhs displaced by new CCGTs | 3,701 | 33,677 | 22,545 | 28,527 | 13,394 |
| Coal Heat Rate (MMBTU/MWh) | 10 | 10 | 10 | 10 | 10 |
| Coal MMBTUs unburned | 37,011,000 | 336,771,630 | 225,453,930 | 285,269,400 | 133,939,962 |
| Coal Heat Content (MBTU/lb) | 12 | 12 | 12 | 12 | 12 |
| Coal Heat Content (MMBTU/ton) | 24 | 24 | 24 | 24 | 24 |
| Incremental ktons of coal unburned | 1,542 | 14,032 | 9,394 | 11,886 | 5,581 |
| **Cumulative annual ktons of coal unburned** | **1,542** | **15,574** | **24,968** | **36,854** | **42,435** |
| Total 2014 Estimated Appalacian Coal Domestic Distribution (ktons) | 267,000 | 267,000 | 267,000 | 267,000 | 267,000 |
| % of Total Appalacian Coal Unburned | 0.6% | 5.8% | 9.4% | 13.8% | 15.9% |

Source: PJM Interconnection, UBS Estimates, US Energy Information Agency

## A closer look at our expectations vs the results

**Lower than expected amounts of new generation were more than offset by higher than expected amounts of Demand Resources.**

In the table below, we begin with our $160.91/MW-day prediction for the 2018/19 PJM capacity auction and list out the differences between our UBSe assumptions and the actual results for RTO. The impacts from those differences are in the right hand column and are based on supply sensitivity of ~$8.45/GW, ultimately adding up to the actual result of $164.77/MW-day for CP and $149.98 for the Base product (a weighted 80%/20% combination of $161.82). As we noted earlier in our 8/21 "PJM: The Results Are In", the first surprise was the significantly lower figure for new generation at only 3.5 GW (including uprates) vs our expectation for 6 GW (flat with last year's auction), although we also expected -1.4 GW of retirements that did not materialize either. However, more than offsetting these errors, we also significantly overestimated the amount of Demand Response that would drop out of the auction by -6 GW under the assumption that much of the Limited product would clear in the base auction at a substantially lower price point (eg – much less DR would clear if the base price was $50/MW-day). In some respects, we associate the higher base product clearing price to continued higher-marginal cost bids from DR, rather than bidding closer to perceived marginal cost.

Net-net, our supply assumptions were about -4.8 GW too low, largely as a result of our Demand Response assumptions. While this could have led to an estimate that was too high, we nevertheless ended up in more or less the right ballpark as a result of leaving in the 2.5% short-term demand procurement target (aka holdback), which artificially suppressed our demand curve by ~3.4 GW and brought our number back down. Although the demand holdback was eliminated when Capacity Performance was approved (pushing up our price estimate in isolation), we had thought we could be low on new supply expectations, so we elected to keep our projections unchanged. As it turned out, we were low on DR rather than new plant. It also appears that we underestimated the effect of bidding strategies and lower energy rents as a result of low natural gas prices, which pushed up results by another ~$12.35 vs our modelling.

**Figure 9: Comparison of RTO Actual Results to UBSe Expectations**

| | UBSe (MW) | Actual (MW) | Diff (MW) | Impact ($/MW-day) |
|---|---|---|---|---|
| **UBSe RTO Assumption (UCAP MW)** | | | | **$ 160.91** |
| **Deltas** | | | | |
| New Gen (From Table 2A) | 6,000 | 2,919 | (3,081) | $ 26.03 |
| Gen Reduction | (1,387) | - | 1,387 | $ (11.72) |
| Uprates | - | 588 | 588 | $ (4.97) |
| Reactivations | - | - | - | $ - |
| Demand Resources | (5,946) | 110 | 6,055 | $ (51.17) |
| Imports | - | 162 | 162 | $ (1.37) |
| EE | 266 | (92) | (358) | $ 3.02 |
| Short-Term Resource Procurement Target (decreased demand) | 3,400 | - | (3,400) | $ 28.73 |
| Bidding strategies/other (higher bids due to lower energy rents) | | | | $ 12.35 |
| **Actual Result (a weighted CP/Base 80%/20% combination)** | | | | **$ 161.82** |

Source: PJM Interconnection, LLC, UBS Estimates

## Next step: figure out which (new) assets cleared

We understand the only new CCGT in the EMAAC region was PSEG's new CCGT at the Sewaren site. For the MAAC region, it appears just a single CC/CT uprate was committed. Rather, the balance of new plants appeared Westwards, with likely *all* of the new CCGT units predicated off cheaper Utica shale rather than Marcellus. We see this as a stark, but expected shift in the orientation of new build. Many plants appear oriented towards

It would appear ~3-4 new CCGTs cleared in PJM's Western RTO region.

We suspect it could well be some combination of the below plants. We flag several of these plants had already been in the market seeking both debt and equity financing.

- Moundsville (West Virginia): 550 MW
- Carroll County (Ohio): 700MW
- Lordstown (Ohio): 800MW
- NTE Middletown (Ohio): 550MW

**Figure 10: 2018/19 Cleared New Generation Capacity by LDA (in UCAP MW)**

| LDA | Uprate | New Unit | Total |
|---|---|---|---|
| EMAAC | 79.6 | 526.7 | 606.3 |
| Other MAAC | 360.0 | - | 360.0 |
| Other RTO | 148.0 | 2,392.6 | 2,540.6 |
| Total | 587.6 | 2,919.3 | 3,506.9 |

Source: PJM Interconnection

## And how many new plants were there bidding?

Above we show a list of new assets that were potentially lined up for the 2018/19 auctions. Many of the same development sites are being bid once again, having failed to clear in prior auctions, lending themselves to our lower expectations. We flag new assets were likely to increasingly materialize in the Ohio region of RTO, potentially adding a cautious datapoint to the potential for Ohio to approve its coal PPA deal to save coal plants in the state.

**Figure 11: New assets that may have bid into the 2018/19 auctions**

| Owner | Project | MWs | Prob |
|---|---|---|---|
| Calpine | Hay Road, DE | 371 | 25% |
| Panda Power Funds | Mattawoman Energy, MD | 1,008 | 75% |
| Panda Power Funds | Hummel (Sunbury coal-to-gas conversion), NJ | 1,065 | 50% |
| LS Power | Hickory Run, PA | 900 | 25% |
| LS Power | Berks Hollow, PA | 855 | 25% |
| Moxie Freedom, LLC | Moxie Freedom, PA | 1,050 | 25% |
| Moundsville Power, LLC | Moundsville, WV | 549 | 100% |
| Clean Energy Future | Lordstown, OH | 800 | 100% |
| NTE Energy | Middleton, OH | 525 | 100% |
| Tenaska | Rolling Hills Conversion (CT to CC), OH | 554 | 50% |
| Tenaska | Westmoreland Genrating Station, PA | 950 | 25% |
| Advanced Power | Carroll County, OH | 700 | 100% |
| Development Partners | St Joe CCGT, IN | 550 | 25% |
| Warburg Pincus LLC | CPV Fairview Energy , PA | 980 | 25% |
| NextEra Energy, Inc. | Gateway Energy Center, NJ | 440 | 25% |
| Gateway Green Energy Holdings LLC | Towanda Township Gas Plant, PA | 165 | 25% |
| Invenergy LLC | Lackawanna Energy Center, PA | 1,370 | 25% |
| Total & Weighted Probability MWs | | 12,832 | 6,047 |

Source: Company sources, UBS estimates

### How much of the existing commitment to PJM happens? Most we think

A wider question remains just how much cleared new PJM capacity will materialize amidst investor pushback on project returns in the renewable/YieldCo sector of late (some participants suggest less than 50% will); that said, many of the latest projects have equity financing already and have achieved financial close. We caution that while figures around completion of plant 'announcements', we think many of the committed plants through PJM are likely to be constructed.

## Did the nuclear units clear? We still expect debate this Fall on EXC's nuke fate

Among the critical questions with the ComEd region clearing at $215/MW-day is whether EXC's nuclear units actually cleared, specifically looking towards the 1,825-MW Quad Cities (we note that 2,955 MW of offered capacity did not clear the auction in ComEd). While its economics were clearly north of $200/MW-day (seemingly the Street bogey for this region), it's unclear that $215/MW-day will be adequate. Rather, we continue to expect a legislative debate in the fall over the need for further support from a Low Carbon plan. Further, the PJM results don't address compensation for EXC's Clinton unit in MISO.

Given continued frustration over budget and pension deal in Illinois, it appears real prospects of any energy bill is increasingly being pushed into the Spring session in 2016. However, with EXC having latitude to retract any formal retirement date to late 2015 off an initial retirement date for Quad Cities expected in Sept 2015 for Quad Cities, we think there's a real chance the plant is permanently retired prior to any legislative review.

**We see a mandatory carbon scheme that is 'market' driven as the likely outcome, focusing on a program that would require retailers in the state to procure a minimum level of 'clean' (e.g. - carbon free) resource.**

In turn, the single-unit Clinton unit may still get a shot, with a retirement announcement expected in December, and final 'go-no go' decision potentially as late as May, 2016. The key question remains to what extent an announcement in September of an initial Quad Cities retirement will cause any political 'leapfrogging' of the issue beyond the all-encompassing budget and pension considerations dominating Springfield.

We see a mandatory carbon scheme that is 'market' driven as the likely outcome, focusing on a program that would require retailers in the state to procure a minimum level of 'clean' (e.g. - carbon free) resource. While we worry about the leakage towards renewables under the scheme, seeing RECs as roughly ~$1/ MWh on a market basis today, we believe EXC could well accept some continued FCF deficit as part of any deal. We estimate total FCF deficits from the two plants generate a total loss north of ~$100 Mn / yr. For more detail see "Debating the Nuclear Option in Illinois."

## Will AEP sell its merchant assets? Yes, we think it's just a matter of time.

**Management remains hopeful for a higher valuation before making a final decision on a sale of the Genco.**

As part of a process to consider any genco sale, important valuation datapoints remain pending including the capacity auction as well as decision on long-term purchased power agreement from the Public Utilities Commission of Ohio (PUCO). Management remains hopeful for a higher valuation before making a final decision on a sale of the Genco. After declines in power pricing for the past few months, we expect the fleet to receive $2.7B, about $300M less vs April. Proceeds are most likely to be reinvested in Transmission, which we would expect to be $2-$3/sh accretive based on a future 10.84% FERC ROE (derived from a lower "midpoint" methodology). Management has described the company as on a "20-mile march" to become the next "premium regulated utility." *Following 2Q commentary that the results of the capacity market could dictate the future of the portfolio, an update could prove forthcoming.*

## Surprise upside: Dominion keeps capacity benefits while under rate review suspension

**We note the potential for savings retention and $0.05-$0.08/sh of earnings benefits from PJM capacity revenues.**

VEPCO began what is effectively a nine-year rate freeze through late-2024 under enabling legislation in Feb 2015 that suspends biennial rate review periods for five years through the end of 2019. We see ROEs in the low-to-mid teens following cost reductions. The suspension was implemented by VA to provide the utility and its customers with rate stability through implementation of the EPA's clean power plan. While the utility assumes the risk of increased compliance costs, higher operating expenses, and extreme weather events, we note the potential for savings retention and $0.05-$0.08/sh of earnings benefits from PJM capacity revenues (including the upcoming Capacity Performance transition auctions) as a result a net long generation position at the utility. Additional capacity payment benefits could accrue in 2019 from the proposed 1,585-MW Greensville CCGT in VA that would come on line in 2019 if approved.

## Next Datapoint is the Transition Auction in Coming Weeks

We maintain both transition auctions will continue to price with a modest risk premium to the base auctions initially held for the 2016/17 and 2017/18 auctions, at $119/MWday and $120/MW-day respectively, with a range of $120-130/MW-day likely for both. This would still provide a meaningful uplift for those clearing in the RTO region for the 2016/17 period, where prices cleared at $59/MW-day, in particular DYN, FE, and EXC. While some investors and industry participants had expected north of $130/MW-day, we see the latest developments as likely taming price expectations on the margin. Given the seemingly higher cost of complying with CP mandates, we suspect only a portion of DR resources will opt to participate in the transition auction to pick up the limited incremental revenues relative to the risk for a DR and EE participant. We expect PJM equities to see this

as a slight negative, not helping the power sector investment thesis following recent retrenchment in the absence of positive catalysts.

**Figure 12: Pricing and Earnings Impact Projection for PJM 2016/17 and 2017/18 CP Incremental Auctions**

| 2016/17 Auction Results ($/MW-day) | Total RTO | RTO | MAAC | EMAAC |
|---|---|---|---|---|
| RCP (Annual) | | $ 59.37 | $ 119.13 | $ 119.13 |
| RCP (Extended Summer) | | $ 59.37 | $ 119.13 | $ 119.13 |
| RCP (Limited) | | $ 59.37 | $ 119.13 | $ 119.13 |
| Cleared Generation MW | 155,634 | 75,443 | 60,886 | 29,464 |
| Cleared EE MW | 1,117 | 611 | 310 | 51 |
| Cleared DR MW (Annual) | 89 | 48 | 33 | 21 |
| Cleared DR MW (Extended Summer) | 2,470 | 617 | 1,053 | 438 |
| Cleared DR MW (Limited) | 9,850 | 4,581 | 4,264 | 1,547 |
| Total Cleared Annual MW | 156,840 | 88,743 | 61,229 | 29,537 |
| Total Cleared Annual + ES MW | 159,310 | 89,360 | 62,282 | 29,974 |
| Total Cleared MW | 169,160 | 93,941 | 66,546 | 31,522 |
| | | | | |
| 60% for CP Incremental Auction | 95,097 | | | |

| Comparative Impact (EPS & EBITDA) | Total RTO | UBSe 2016 Est | % Impact |
|---|---|---|---|
| DYN (EBITDA) | $ 169 | $ 1,187 | 14% |
| AEP | $ 0.19 | $ 3.67 | 5% |
| FE | $ 0.27 | $ 2.72 | 10% |
| EXC | $ 0.23 | $ 2.38 | 10% |
| NRG (EBITDA) | $ 113 | $ 2,953 | 4% |
| AES | $ 0.05 | $ 1.27 | 4% |

| 2017/18 Auction Results ($/MW-day) | Total RTO | RTO | MAAC | COMED |
|---|---|---|---|---|
| RCP (Annual) | | $120.00 | $120.00 | $120.00 |
| RCP (Extended Summer) | | $120.00 | $120.00 | $120.00 |
| RCP (Limited) | | $106.02 | $106.02 | $106.02 |
| Cleared Generation MW | 154,690 | 51,604 | 63,719 | 20,490 |
| Cleared EE MW | 1,339 | 86 | 369 | 583 |
| Cleared DR MW (Annual) | 1,489 | 17 | 814 | 52 |
| Cleared DR MW (Extended Summer) | 7,163 | 1,805 | 2,578 | 1,170 |
| Cleared DR MW (Limited) | 2,322 | 901 | 885 | 256 |
| Total Cleared MW | 167,004 | 54,412 | 68,364 | 22,551 |
| | | | | |
| 70% for CP Incremental Auction | 112,194 | | | |

| Comparative Impact (EPS & EBITDA) | Total RTO | UBSe 2017 Est | % Impact |
|---|---|---|---|
| DYN (EBITDA) | $ - | $ 1,222 | 0% |
| AEP | $ - | $ 3.75 | 0% |
| FE (Includes Uncleared) | $ 0.15 | $ 2.23 | 7% |
| EXC (Includes Uncleared) | $ 0.12 | $ 2.52 | 5% |
| NRG | $ - | $ 1.36 | 0% |
| AES | $ - | $ 1.40 | 0% |

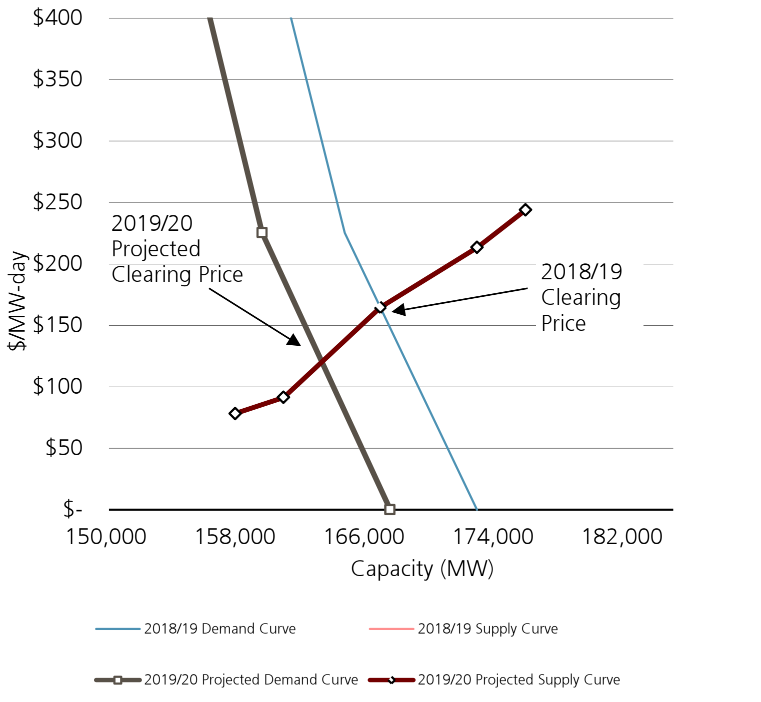
Source: PJM Interconnection, UBS Estimates, FactSet

## So what happens next year? Likely lower prices

Thinking ahead to next year, we've noted the possibility of as much as a -5 GW demand reduction in the next load forecast (see below), which could shift the demand curve leftward and reduce the price cross -$40 to $120 before accounting for changes in supply.

- We also note the possibility that Dominion will bid in its proposed 1,586-MW Greensville CCGT in VA next year as the plant is expected to be online by 2019 if approved (D could keep capacity upside from the plant through 2024 under its current 5-year suspension of rate reviews; see below). We also expect to refine our supply curve modelling when PJM releases its scenario simulation results later this year.
- We also remind investors that the CP requirement remains at 80% (flat YoY), *rather* than increasing ratably (eg – there's no improvement from Capacity Performance regulations).
- *Rollover of new capacity* that did not qualify for this auction will likely be financially solvent and have completed sufficient interconnection process to be eligible for the auction.

**Figure 13: RTO Supply vs. Demand, 2018/19 Actual vs. UBSe 2019/20: $120/MW-day Assuming -5 GW Demand and Unchanged Supply**




Source: PJM Interconnection, UBS Estimates

## Proposed load forecasting methodology shifts could reduce load by 5 GWs

**PJM's Load Analysis Subcommittee has been working out improvements to the load forecast methodology to enhance its accuracy, especially for forecasting of energy efficiency improvements.**

In response to several years of overly "optimistic" (high) forecasts of future electric load used in determining capacity costs, PJM's Load Analysis Subcommittee has been working out improvements to the load forecast methodology to enhance its accuracy, especially for forecasting of energy efficiency improvements. Work is expected to continue through the end of the year with an eye toward incorporating the new forecast methods in the Jan 2016 fifteen-year load projection. While the work remains incomplete, preliminary indications from subcommittee presentation materials and member comments indicate the possibility of reducing as much as ~5 GWs of load currently in the 2015 fifteen-year forecast. Our modelling of supply and demand for the anticipated Base Residual Capacity Auction (BRA) indicates a sensitivity of ~$40/MW-day to this level of reduced load, potentially offsetting much of the uplift created by the Capacity Performance (CP) scheme. We reiterate our caution once more that the process remains in proposal form – and could yet evolve. For more detail, please see our 7/17/15 Taking a Load Off at PJM. *The question remains whether PJM equities will immediately narrow their focus towards next year's auction dynamic – and risk of lower prices YoY from lower demand?*

**Figure 14: Incremental Impacts to 2018 RTO Load Forecast in the Jan 2016 report**

| | | |
|---|---|---|
| **2018 RTO Load Forecast as of Jan 2015 report (MW)** | | **161,128** |
| | | |
| **Items identified in June 9th Planning Committee Presentation** | | |
| New weather specification | -1.2% | (1,900) |
| Autocorrelation AR (1) correction | -0.7% | (1,100) |
| Equipment saturation/Efficiency variables | -4.0% | (6,400) |
| Total | -5.9% | |
| Placeholder binary stat correction already baked into 2015 forecast | 1.1% | 1,800 |
| Incremental total vs 2015 load forecast | -4.8% | |
| | | |
| **Additional factors being considered:** | | |
| Forecast of incremental distributed solar | -0.9% | (1,500) |
| Shorten historical weather from 40 years to 20 years ** | 1.5% | 2,400 |
| Extract EE that cleared 2017/18 BRA *** | 0.8% | 1,300 |
| Extract incremental EE to clear 2018/19 BRA *** | 0.2% | 400 |
| | | |
| **Total potential net impact vs 2015 forecast** | **-3.2%** | **(5,000)** |

* All impacts are still preliminary pending a final report from PJM
** UBS estimates impact on forecast from the impact of warmer weather in recent decades
*** PJM is still working on a forecast methodology for capacity market EE; we've simply taken the EE that cleared in last year's 2017/18 BRA as an example of what could be subtracted.

Source: PJM Interconnection LLC, UBS estimates

## Distributed solar also reduces forecast

**Assumptions for distributed solar appear exceptionally uncertain, with methodology on reflecting this implicit demand reduction unclear**

The impact of distributed solar is not yet being explicitly factored into PJM's load forecasts. Nevertheless, the current level of installed distributed solar capacity (ICAP), estimated by PJM to be about 2,000 MW in 2015, is presumably an implicit part of the 2015 load forecast. Using 2015 actual load as a base, the task ahead for PJM is to determine a forecasting methodology for incremental distributed solar in order to explicitly factor in the resulting load reduction in future load forecasts to enhance their accuracy. PJM's own forecast for distribute solar in 2018 is approximately 4,500 MW (a 31% CAGR). In the table below, we apply a

60% capacity factor to the incremental 2,500 MW to account for the expected impact of ICAP on load for the fact that daily solar peak generation is not actually coincident with peak load. Our final estimate is applied in Figure 1 above to illustrate a net -5 GW reduction in load for the Jan 2016 forecast.

**Figure 15: Forecast of incremental distributed solar in PJM RTO, 2015A-2018E**

| **Forecast of incremental distributed solar** | |
|---|---|
| 2015A Installed distributed solar capacity (ICAP) | 2,000 |
| 2018 PJM forecast RTO distributed solar | 4,500 |
| PJM forecast RTO 3-yr dist solar CAGR | 31% |
| 2015A-2018E incremental dist solar | 2,500 |
| % of ICAP coincident with peak load | 60% |
| 2018E load reduction from distributed solar vs 2015 load forecast | 1,500 |

Source: UBS estimates, PJM Interconnection, LLC

Beyond distributed solar, we note some desire to address wider adoption of behind-the-meter generation in the forecast load.

## But Prices are likely up (big) again 2020/2021

Consistent with the up-and-down rollercoaster of PJM capacity prices, we flag that 2020 (two years out) should likely prove up *just as much (if not more) than the losses seen next year from lower demand, as the transition to a 100% CP is likely to push out significant quantities of DR.* The question remains to what extent DR will be willing to take on significantly greater performance risk for relatively comparable compensation; additionally, it is unclear exactly how much DR capacity will need to 'double up' to meet commitments.

*For further detail, please see our earlier notes:*

8/21/15 PJM: The Results Are In
8/21/15 PJM: Some Final Thoughts Ahead of the Results
8/21/15 PJM Capacity Auction Survey: Moderating Expectations into Auction Eve
8/20/15 Demand Growth Paints Paler Pic of Economy
8/17/15 The Auction is Upon Us
8/11/15 Can Cash Provide a Power Floor?
8/10/15 Debating the Nuclear Option in Illinois
8/7/15 D: Laying the Groundwork
7/23/15 PJM: Yet Another Transition Auction Delay
7/17/15 Taking a Load Off at PJM
7/9/15 PJM Capacity Auction Survey: Transition Upside Surprise?
7/2/15 PJM Call: Deciphering Capacity Performance (Inc. Transcript)
6/24/15 PJM: What to Expect for the Incremental Auction
6/12/15 Pushing Around Power: Market Power and Manipulation (Includes Call Transcript)
6/11/15 Poised to Perform with PJM
6/3/15 What a Bull Case on Power Would Look Like?
5/6/15 PJM: Minding the Base Capacity Auction Print
4/27/15 The Gas Revolution Continues
2/13/15 Could Transmission Crash the Capacity Party?
2/3/15 PJM: Honing in on a Price Estimate
2/2/15 The Wild PJM West (and East)

## Statement of Risk

Risks for Utilities and Independent Power Producers (IPPs) primarily relate to volatile commodity prices for power, natural gas, and coal. Risks to IPPs also stem from load variability, and operational risk in running these facilities. Rising coal and, to a certain extent, uranium prices could pressure margins as the fuel hedges roll off Competitive Integrateds. Further, IPPs face declining revenues as in the money power and gas hedges roll off. Other non-regulated risks include weather and for some, foreign currency risk, which again must be diligently accounted in the company's risk management operations. Major external factors, which affect our valuation, are environmental risks. Environmental capex could escalate if stricter emission standards are implemented. We believe a nuclear accident or a change in the Nuclear Regulatory Commission/Environment Protection Agency regulations could have a negative impact on our estimates. Risks for regulated utilities include the uncertainty around the composition of state regulatory Commissions, adverse regulatory changes, unfavorable weather conditions, variance from normal population growth, and changes in customer mix. Changes in macroeconomic factors will affect customer additions/subtractions and usage patterns.

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| **12-Month Rating** | **Definition** | **Coverage**[1] | **IB Services**[2] |
|---|---|---|---|
| **Buy** | FSR is > 6% above the MRA. | 45% | 36% |
| **Neutral** | FSR is between -6% and 6% of the MRA. | 42% | 32% |
| **Sell** | FSR is > 6% below the MRA. | 13% | 20% |
| **Short-Term Rating** | **Definition** | **Coverage**[3] | **IB Services**[4] |
| **Buy** | Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event. | less than 1% | less than 1% |
| **Sell** | Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event. | less than 1% | less than 1% |

Source: UBS. Rating allocations are as of 30 June 2015.
1:Percentage of companies under coverage globally within the 12-month rating category. 2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.
3:Percentage of companies under coverage globally within the Short-Term rating category. 4:Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

**KEY DEFINITIONS: Forecast Stock Return (FSR)** is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months. **Market Return Assumption (MRA)** is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium). **Under Review (UR)** Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation. **Short-Term Ratings** reflect the expected near-term (up to three months) performance of the stock and do not reflect any change in the fundamental view or investment case. **Equity Price Targets** have an investment horizon of 12 months.

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**UBS Securities LLC:** Julien Dumoulin-Smith; Michael Weinstein; Paul Zimbardo.

**Company Disclosures**

| Company Name | Reuters | 12-month rating | Short-term rating | Price | Price date |
|---|---|---|---|---|---|
| **AES Corporation**[16] | AES.N | Neutral | N/A | US$12.00 | 21 Aug 2015 |
| **American Electric Power, Inc.**[2, 4, 6a, 6b, 7, 16] | AEP.N | Neutral | N/A | US$57.29 | 21 Aug 2015 |
| **Calpine Corporation**[2, 4, 6a, 13, 16] | CPN.N | Neutral | N/A | US$16.50 | 21 Aug 2015 |
| **Consolidated Edison**[16] | ED.N | Sell | N/A | US$66.06 | 21 Aug 2015 |
| **Dominion Resources**[2, 4, 5, 6a, 6b, 6c, 7, 16] | D.N | Buy | N/A | US$75.40 | 21 Aug 2015 |
| **Dynegy, Inc.**[2, 4, 5, 6a, 16] | DYN.N | Buy | N/A | US$25.32 | 21 Aug 2015 |
| **Exelon Corp.**[4, 6a, 6c, 7, 16] | EXC.N | Neutral | N/A | US$33.00 | 21 Aug 2015 |
| **FirstEnergy Corp.**[16] | FE.N | Sell | N/A | US$33.99 | 21 Aug 2015 |
| **NRG Energy Inc.**[16] | NRG.N | Buy | N/A | US$19.58 | 21 Aug 2015 |
| **Public Service Enterprise Group**[16] | PEG.N | Neutral | N/A | US$42.04 | 21 Aug 2015 |
| **Talen Energy Corp**[16] | TLN.N | Neutral | N/A | US$15.17 | 21 Aug 2015 |

Source: UBS. All prices as of local market close.
Ratings in this table are the most current published ratings prior to this report. They may be more recent than the stock pricing date

2. UBS AG, its affiliates or subsidiaries has acted as manager/co-manager in the underwriting or placement of securities of this company/entity or one of its affiliates within the past 12 months.
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